

REMARKS

This Preliminary Amendment adds a cross-reference to related application serial no. 09/839,582, which was filed on April 20, 2001. In addition, the abstract was amended to further describe certain embodiments of the invention. Support for this amendment is found throughout Applicants' specification (see, e.g., page 2, lines 11-15). No new matter is added by this amendment.

Claims 3-37 have been cancelled. New claims 39-60, including new independent claims 39 and 47, have been added to more fully define the various embodiments of the invention described in Applicants' specification. As such, independent claims 1, 38, 39, and 47 are pending. Similarly, dependent claims 2 and 52-56 (which depend from claim 1), 57-60 (which depend from claim 38), 40-46 (which depend from claim 39), and 48-51 (which depend from claim 47) are also pending.

Support for independent claim 1 and the corresponding dependent claims 2 and 52-56 is found, for example, at page 3, line 14 through page 6, 16. Support for claim 38 and corresponding dependent claims 57-60 is found, for example, at page 6, line 17 to page 7, line 9. Support for claim 39 and corresponding dependent claims 40-46 is found, for example, at page 2, lines 16-26 and at page 6, line 17 to page 7, line 29. Support for independent claim 47 and dependent claims 48-51 is found, for example, at page 2, lines 16-26 and at originally filed claims 27-30 and 35. No new matter has been added.

Original claims 1 and 2 were rejected by the Examiner under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,834,047 to Ahn. The Examiner noted that Ahn failed to disclose the viscosity of the edible ink as required by claim 1, but the Examiner asserted that that "there does not appear to be any reason why [Ahn] would not contain an ink composition with applicants claimed viscosity." This rejection is respectfully traversed for the reasons that follow.

Figure 4 and the discussion in cols. 5-6 of the Ahn patent describe a printing process in which an edible ink is applied on a perforated etched plate. The ink then flows through the perforations on the plate and forms a single color image on a surface of a molded confectionary material. If a multi-colored image is required, the step is repeated several times, each time with a different color edible ink. The image is then covered by a layer of confectionary material in the mold.

The edible ink in Ahn includes the following components: 1-30 wt% food dye, 1-30% purified water, 1-50wt% titanium dioxide, and 40-98% liquified sugar (col. 2, lines 50-53, col. 4, lines 17-21). Ahn teaches that the viscosity of the liquified sugar component should be 50-90 Brix to ensure that the ink flows smoothly through the perforated plates and adheres to the confectionary material (col. 2, lines 54-61).

The Brix scale is a refractive index tool that is effectively calibrated to the number of grams of cane sugar contained in 100 ml of water.¹ The Brix scale is not a measure of viscosity, although increased amounts of sugar solute make a 90 Brix sugar solution somewhat more viscous than a 50 Brix sugar solution. The present inventors performed an informal viscosity test and found that even the 90 Brix solution had a viscosity of less than about 20 cp using the test method described in the present application.

The other components of the Ahn ink are food dye, water and titanium dioxide. Of these components, only the TiO₂ would be expected to have a substantial effect on the viscosity of the Ahn ink solution. The present inventors performed another informal viscosity test on an ink base including 50% by weight of the 90 Brix sugar solution and 50wt% TiO₂, and found the viscosity of the ink base was only about 500 cp using the test methods described in the present application. Therefore, in view of these viscosity tests, one of ordinary skill in the art would expect the ink described in the Ahn reference to have a viscosity significantly lower than the presently claimed 2000 cp lower limit.

The ink described in the present case is formulated to be useable in an offset printing machine (see pages 6-7 of the present application). The ink used in this process must adhere to a photopolymer plate, release cleanly from the plate and transfer to a blanket cylinder (rubber roller). The ink must then transfer from the rubber roller to the surface of the edible article. If the viscosity of the ink is too low, the ink will not adhere to the photopolymer plate and simply runs off. If too thick, the ink will not release cleanly from the photopolymer plate or the rubber roller and form an image. The ink must also dry quickly on the surface of the edible article so that multiple colors may be applied in the offset printing machine.

¹ See, e.g. www.nationalmicroscope.com/refractometers.